

Project Guide



PROJECT Agriculture
Project-Based Learning and
Teaching Series



More Than Just Farming

What are the agriculture jobs of the future?



ALBERTA 
www.albertamilk.com/teacher-resources/

PROJECT Agriculture

The Canadian dairy industry is diverse, ranging from family farms to partnerships, and includes regular and organic dairy farms. Dairy cattle are an important feature of many Canadian and Alberta landscapes, and provide a range of products that many people use daily. The dairy industry also provides a range of jobs and occupations. Dairy farmers take their responsibilities seriously, including those for the animals in their care, as well as the impact their industry has on the environment. Milk and dairy products play an important role in a healthy and balanced diet.

The **PROJECT Agriculture** project-based learning resources encourage students to build understandings of the importance of agriculture to their daily lives, whether they live in rural or urban communities. These resources connect students to farmers across Alberta, through Alberta Milk's **Ask a Dairy Farmer** program.

Acknowledgements

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Every effort has been made to acknowledge sources used in the **PROJECT Agriculture** resources. In the event of questions arising as to the use of any material, we will be pleased to make the necessary corrections in future printings. Please contact Patricia Shields-Ramsay at InPraxis Learning at 780.421.7163.



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More than Just Farming

What are the agriculture jobs of the future?

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More than Just Farming can be accessed on the Alberta Milk website in the **Programs and Resources for Teachers** section at <https://albertamilk.com/teacher-resources/>. Project components include:

- This Project Guide
- Student **Learning Sources**
- **Developing Competencies** with Students
- Assessment Support
- Teacher Fast Facts and Student Vocabulary Support
- Project Tools

Project activities are provided in four sections:

- Spark Inquiry and Curiosity
- Search and Investigate
- Design and Create
- Publish and Share

Each section provides a suggested sequence of activities. These activities should be selected and modified to best meet the needs of your students.



More than Just Farming

What are the agriculture jobs of the future?

Project Summary

Over 10 000 Albertans, including dairy producers and their families, rely on milk for their livelihoods. These also include veterinarians, nutritionists, researchers, professors, consultants, government employees, salespeople, milk truck drivers, as well as many processing and retail employees. Alberta is the fourth largest milk producer in Canada.

More than Just Farming encourages students to explore information and stories about agriculture in Alberta and Canada. Students consider how the agricultural jobs of the present and future meet needs and support the well being of individuals and communities.

More than Just Farming supports learning in **Grades 4, 5 and 6 Language Arts, Health and Life Skills and Math** curriculum and **Career and Technology Foundations for Grades 5 and 6**, with connections to **Social Studies and Science** curricular areas and support for competencies, literacy and numeracy.

Highlights

In this project, students create a job description for an agricultural job of 10 years into the future, when they are part of the work force. They explore the needs and possibilities involved in agriculture of the future.

- 1 Students brainstorm activities and jobs that are connected to agriculture. They think critically about the importance of agriculture, how technology is increasingly used and growing demands in global food production.
- 2 Students explore stories about families who farm. They research skills, activities and technologies involved in farming and consider how technology will shape future jobs in agriculture. They consider personal interests and future careers and jobs in agriculture.

Competency-focused student resources focus on problem solving, personal growth, creativity and innovation as well as literacy and numeracy strategies.

- 3 Students create a job description that predicts and explores an agricultural job 10 years into the future, when they will be part of the work force. They address future needs and possibilities in agriculture. The job description can take the form of an advertisement, short story or other form of writing and be shared on a class poster or online **Padlet** or **Canva** board display.
- 4 Students explore conclusions and perspectives through questions. How do you think agricultural jobs have changed over the years? What do you think is the most important factor of change? How will jobs change in the future? How do you think farmers can continue to improve farming practices? How can people involved in other occupations improve agricultural practices? What impact does growth and improvement in agriculture have on individuals, communities and the environment? How does this apply to other types of human activities? How do you think technology will be used in agricultural jobs of the future? How do you think farmers in the present can support farmers of the future?



Project Stages and Timing

More than Just Farming provides a series of activities for the development of a project-based inquiry. Timeline options are suggestions only, as choices about activities will influence the time required for the project.

Project Stage	Activity Focus	Timing Options
Spark Inquiry and Curiosity	Activities in this stage ask students to explore the core question, what it means to them and how they want to focus their project. They select an inquiry question around which to develop their project.	4 to 5 class periods
Search and Investigate	Activities in this stage provide opportunities to search for and critically assess sources, organize information, consider perspectives and consult with experts to build understandings. They use Learning Sources handouts as trusted sources and Developing Competencies activity handouts to develop skills and understandings related to their projects.	7 to 10 class periods
Design and Create	Activities in this stage ask students to apply ideas and information to the creation of a project that shares their insights and learning.	5 to 7 class periods
Publish and Share	Activities in this stage suggest options to display and share completed projects.	3 to 5 class periods



Technology Integration

Digital creation tools can support learning in a project-based inquiry, including exploration, research, project creation and sharing. The following apps and online programs are referenced as options throughout the **PROJECT Agriculture** project-based series of learning and teaching resources.

Note that some online programs may require sign-in information, but do offer free versions. Some of these programs may also require varying degrees of support when used with students, while others may be more suitable for teacher use. Check for privacy settings in these apps and online programs if you do not want to make students' work public.

Google Classroom is a set of productivity tools that includes email, documents, and storage. Classroom was designed to save time, keep classes organized and improve communication. Classroom can be used to manage and share project work and sources.

Google Keep is a note-taking app that integrates with **Google Docs**. Notes, links, images, screenshots and videos can be shared. Plan and manage project tasks and keep research notes, vocabulary lists and trusted sources.

Google Drive provides online storage and creation of **Google Docs, Slides, Sheets and Forms**. It can be used to hold and share project work.

HyperDoc, found at <http://hyperdocs.co/>, uses interactive Google Docs or Slides that can be created as an instructional activity or lesson. Links to videos, trusted sources, class Padlet boards, Google Maps or other programs and apps can be embedded in a HyperDoc.

Padlet, found at www.padlet.com, is a virtual wall that allows sharing of any content (images, videos, documents, text) on a common topic.

Canva, found at www.canva.com, is a web-based graphic design tool and app that can be used to design posters, infographics, presentations, social media and photo collages. Students can sign up with a Google account or through an email address and password.

Pinterest, found at www.pinterest.com, is a social network that allows you to visually share, and discover, images or videos to your own or others' boards. **Padlet** and **Pinterest** boards can be set up to share project ideas and products with other teachers and classrooms.

Glogster, at <http://edu.glogster.com/>, is an online platform that allows you or your students to create interactive online posters, with text, images, graphics, audio and videos, and share them with others electronically. Glogster can be used to create profiles and timelines. Templates are provided on the website.



Apps such as **Evernote** and **OneNote** can be used to collect, organize and share sources of information and research, while online software such as **Skype** can enable conversations, face-to-face interviews and collaboration with other classrooms and community members.

Prezi, found at www.prezi.com, is a presentation tool that can be used as an alternative to traditional slide making programs such as **PowerPoint**. Instead of slides, Prezi makes use of one large canvas with pan and zoom capabilities. Students can use this tool to create and share projects and learning products.

MyHistro, found at www.myhistro.com, is an app that allows you to combine maps and timelines into one presentation, convert any public timeline into a personal pdf file or export into **Google Earth** format for offline storage.

Tiki-Toki, found at www.tiki-toki.com, is web-based software for creating interactive timelines that can be shared on the internet. The free account can be used to create a fully-functional timeline that can be shared. Tiki-Toki also provides desktop timeline software for Windows, Mac and Chromebooks that can be used to create timelines on local computers.

Read Write Think provides a simple timeline, found at www.readwritethink.org/files/resources/interactives/timeline_2/, that allows students to organize and create a timeline by date, time or event. Timelines can be saved as a file.

Wordle, accessed at www.wordle.net, and **Tagxedo**, accessed at www.tagxedo.com, provide online platforms that students can use to create word clouds.

Kahoot, at www.getkahoot.com, is a platform that allows students to create learning games from a series of multiple choice questions, with videos, images and diagrams. Students can create kahoots based on what they are learning about Canadian and Alberta history, geography, agriculture, natural resources and ways of life.

Snapchat, at www.snapchat.com offers a feature called **My Story**, created from video clips and pictures taken over time and made into a movie. Stories can be downloaded to students' camera rolls and shared via email with a class.

Sway, accessed at www.sway.com, is a digital storytelling app for the creation of interactive presentations, newsletters and personal stories. Sways can be shared with others through email and privacy settings can be customized.



Learning and Competencies

More than Just Farming provides opportunities for student to think creatively, consider innovation and explore potential opportunities in the career field of agriculture.

Students work collaboratively to develop ideas, explore sources, consult with community members and experts and communicate their findings and insights. Technology-based skills are also developed as students use digital tools to research, create and publicly share their projects.

The chart that follows focuses on competencies that integrate and apply across curricular areas.

Specific learning outcomes from the Alberta programs of study promote these competencies and the learning experiences in the **More than Just Farming** project.

Assessment tools can be used to reinforce competency development and assess student growth around Alberta curriculum-specific learning outcomes. These assessment tools include a:

- **Learning Checklist** that support assessment of specific learning outcomes and development of competencies
- **Project Check-In** chart that provides criteria statements that students can use to self-assess or monitor their learning
- **Rubric** that can be customized for student use as they develop their projects



Consult **Assessment Support for More than Just Farming** to find strategies and templates for assessment of learning and growth in student competencies.

The assessment checklists and templates include fillable text fields and checkboxes. These PDF documents can be saved and completed electronically.



<h2>Competency Focus</h2>	<h2>Curriculum Focus</h2> <p>These project activities integrate across Alberta Social Studies, Language Arts and Math programs of study. Click the @grade level subject area on which you want to focus to go to a specific learning outcomes checklist.</p>	<h2>Literacy and/or Numeracy Focus</h2>
 <h3>Creativity and Innovation</h3> <p>Students explore ideas, materials and processes to envision possibilities and explore options for responding to issues and conditions.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to explore new ideas, generate creative solutions and create original products to investigate how technology and innovation may affect agricultural jobs and activities in the future.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts @Grade 6 Language Arts</p>	<p>Students focus on the ways that diverse modes and media can be used to represent and share new ideas and innovative approaches to challenges and issues. They use diverse modes and media to share and present.</p> <p>Students create and interpret different representations of quantitative information.</p>
 <h3>Critical Thinking</h3> <p>Students use reasoning and develop or apply criteria to assess, conceptualize and synthesize ideas and information.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to interact with sources to generate questions, draw comparisons, identify similarities and differences, make inferences and assess local and global needs and priorities.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts @Grade 6 Language Arts @Grade 5/6 Career and Technology Foundations @Grade 4 Health @Grade 5 Health @Grade 6 Health</p>	<p>Students evaluate information from several sources to determine relevant and irrelevant information and consider the intent of a message or point of view.</p> <p>Students interpret, compare and use quantities commonly used in real-life situations. They interpret data from a graph or chart to make inferences and draw conclusions.</p>
 <h3>Manage Information</h3> <p>Students use multiple literacies to access, share and create knowledge and build understandings.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to organize and synthesize information gathered from a variety of sources, including data and statistics.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts @Grade 6 Language Arts @Grade 4 Math @Grade 5 Math @Grade 6 Math</p>	<p>Students determine a purpose and develop questions to focus an information search. They select, sort and analyze information from a variety of sources and identify gaps. They organize texts according to their purpose or intent.</p> <p>Students organize objects, ideas or information using a classification system.</p>
 <h3>Problem Solving</h3> <p>Students select strategies and resources to apply the research process to a problem or question and develop original ideas, solutions and products.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to apply a research process and activate background knowledge, information or resources to build and apply understandings.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts</p>	<p>Students make connections to background knowledge.</p> <p>Students navigate through maps, using traditional, non-digital or digital techniques.</p>

<h2>Competency Focus</h2>	<h2>Curriculum Focus</h2> <p>These project activities integrate across Alberta Social Studies, Language Arts and Math programs of study. Click the @grade level subject area on which you want to focus to go to a specific learning outcomes checklist.</p>	<h2>Literacy and/or Numeracy Focus</h2>
 <p>Communication</p> <p>Students share ideas through oral, written and non-verbal media. They participate in formal and informal exchanges with others, while considering their and others' context and experiences.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to use a variety of oral, written or visual modes of expression when exchanging ideas, considering perspectives and points of view and working with others to construct understandings.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts @Grade 6 Language Arts</p>	<p>Students acquire subject and task-specific vocabulary related to their learning. Students present ideas or information in a logical and clear manner and begin to use effects to enhance communication.</p>
 <p>Collaboration</p> <p>Students participate, exchange ideas and share responsibilities to complete their learning tasks.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to use language and text to build upon ideas or expand understandings with others, listen to and consider different perspectives and share roles and responsibilities to accomplish group tasks.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts @Grade 6 Language Arts @Grade 5/6 Career and Technology Foundations @Grade 4 Health @Grade 5 Health @Grade 6 Health</p>	<p>Students apply oral and written language, tone and formality, as appropriate, when communicating with peers and adults.</p>
 <p>Global and Cultural Citizenship</p> <p>Students acknowledge other perspectives and consider information to build understandings of local and global issues of food production.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to consider a range of needs, perspectives or approaches and demonstrate respect for and commitment to the future health and well being of local and global communities.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts @Grade 6 Language Arts @Grade 5/6 Career and Technology Foundations</p>	<p>Students are encouraged to apply literacy-related skills as part of participation as a citizen in communities.</p>
 <p>Personal Growth and Well-being</p> <p>Students draw on their strengths and interests to identify a research focus. They reflect on their own learning.</p>	<p>Outcomes in the following curricular areas are supported by project activities that ask students to expand their interests and develop their own thinking and learning processes as they speak, listen, read, write, view and represent.</p> <p>@Grade 4 Language Arts @Grade 5 Language Arts @Grade 6 Language Arts @Grade 5/6 Career and Technology Foundations @Grade 4 Health @Grade 5 Health @Grade 6 Health</p>	<p>Students reflect on their own learning and are encouraged to develop a sense of their strengths and challenges.</p>





Project Activities

More than Just Farming provides opportunities for students to focus on the future needs and possibilities involved in agricultural jobs. **What are the agricultural jobs of the future?**

Spark Curiosity and Inquiry

Brainstorm

Initiate the **More than Just Farming** project with a board brainstorm share. Challenge students to brainstorm present and future jobs that are connected to agriculture. As they brainstorm jobs, assign a group “runner” to record their ideas on the board.

Work with students to look for connections between the jobs they have listed. Explore potential connections by posing questions such as:

- Which of these jobs are most closely connected to the land and natural resources?
- Which of these jobs make the most use of technology?
- Which of these jobs focus on protecting the land, its resources and the environment?
- Which of these jobs require knowledge and learning from subjects such as math, science or social studies?
- Which of these jobs require the most physical activity?

Ask students to share other questions that can help them make connections between different agricultural jobs. Add other jobs that students identify as they explore these questions. Invite students to make some initial predictions about how they think agricultural activities and jobs may change in the future.

Connect to Prior Learning

Ask students to discuss and explore what agriculture involves. Discuss and create a definition of agriculture on the board before students start brainstorming. **Agriculture** refers to the practices involved in growing crops and feeding and raising livestock for food and other products.

Customize this project by creating your own **Hyperdocs**, using the links from this guide and selecting those activities you think are most appropriate for your students.

Statistics Canada predicts that from 2011 to 2020, there will be a shortage of workers to fill the available opportunities in most agriculture sectors. The three main sectors include:

- Contractors, Operators and Supervisors in Agriculture, Horticulture and Aquaculture
- Technical Occupations in Life Sciences
- Life Science Professionals

Find more information in the **More than Just Farming Teacher Fast Facts & Student Vocabulary**.

Students can be asked to complete a KWHL Chart to explore their prior knowledge and interests. Find this graphic organizer in the **More than Just Farming Project Tools**.

Make connections to what students have learned in Social Studies about the land and natural resources.

Connect to Experiences

Share stories about connections to agricultural places, events and activities that students have experienced. Discuss the characteristics of agricultural communities that students live in or have visited.

Scaffold

Support students in this activity by providing your own examples of jobs that are connected to agriculture.

Students may require support with some of the statistics found in background sources. Reinforce numeracy skills by providing time in the classroom to compare percentages to fractions and discuss when percentages represent increases or decreases.

Need for Food

Build context for this project by discussing the need for food to support a growing population. Share perspectives with students in a whole class setting. As you share examples of evidence that supports the need for more food production, record key ideas on a class chart. Students can also be asked to construct their own **T-Charts**, differentiating between opinions they encounter about the demand for increased food production and evidence that supports opinions.

National Geographic provides an online article called *The Future of Food* at www.nationalgeographic.com/foodfeatures/feeding-9-billion/. This article provides photos, graphs and maps that identify the environmental challenges involved in food production; small farms and farmers; and steps needed to meet the demand for food for the world's population. **Select only those parts of the article that are appropriate for your students or use it for your own background.**

Graphic organizers, including a T-Chart, are provided in the **More than Just Farming Project Tools**.

Tell students that most available farmland is already being farmed. Ask them to ponder how the need to increase food production can be met on existing farmland.

- Discuss how farmers are looking at more efficient practices to increase the amount of food they produce without damaging the land and resources. This includes sustainable agriculture and reducing food waste.
- Technology is also helping farmers make or grow their products more efficiently. These trends influence the types of jobs that support the agricultural industry. What types of jobs do you think will be needed in the future to feed the world's population?

Watch the *Ag Career Video* from the **Canadian Agricultural Human Resource Council**, found at www.cahrc-ccrha.ca/resources/get-agricultured.

Discuss the importance of the concept of innovation. **Innovation** can be simply described as changing or creating an idea, process or item that improves ways of life. How do students think innovation is important to agricultural activities and jobs?

Project Context and Wonder Questions

Challenge students to build a deeper understanding of the ways that agriculture jobs of the future can contribute to ways of life in the future. Tell students that they will focus on examples of ways that agriculture jobs of the future can respond to changes in farming, the use of technology, the growing demand for more food and the needs of individuals and communities.

Students contribute a job description to a class **Padlet**, **Canva** or poster board that explores the potential of agricultural jobs 10 years into the future, when they will enter the work force.

In their job descriptions, students address connections between farming practices, changes in farming and the increasing demand for food in local and global communities. They identify the knowledge, skills and values that are necessary for a job of the future. Student job descriptions can be planned to include photos, examples, images and/or graphs.

The job descriptions that students create should be focused on a project "wonder" question that they select or create. Remind students that the core question for their project-based inquiry is: **What are the agriculture jobs of the future?**

Encourage students to start by posing and recording questions they wonder about when they are asked to consider how agricultural jobs of the future can respond to needs of the future. Students can record their questions on a digital bulletin board or poster paper.

Provide support by suggesting and exploring potential "wonder" questions that help students respond to the core question. **Draw ideas from the following sample questions and the background sources that may support initial exploration of each question. Note that some background sources are suitable for students, while others are suggested as sources of professional knowledge.**

- **Sample Wonder Question:** How have modern farming practices been affected by changing technologies?

Consult Teacher or Student Background Sources

Visit the Agriculture and Agri-food Canada's webpage, **Discover Agriculture**, to explore different types of agricultural products in Canada, including discussions of how changes in technology and research has affected the way they are produced. Find this webpage at www.agr.gc.ca/eng/about-us/publications/discover-agriculture/?id=1411999466585. This source is appropriate to share with students to find articles that relate to different trends in Canadian food production.

Students should be encouraged to develop and/or select their own project "wonder" question as well as the final product they create.

Wonder questions can be constructed to focus on future jobs that are necessary to respond to environmental concerns and sustainability in agriculture. This project focus can support learning outcomes in **Grade 4 Science Waste and Our World** outcomes. Similarly, questions that focus on jobs that are needed to respond to effects of climate change and practices farmers use can reinforce **Grade 5 Science Weather Watch** outcomes.

Reinforce Language Arts and literacy skills by focusing on the elements of opinion writing. Reinforce Health and Life Skills outcomes by challenging students to find out how much of the food they eat in a week is "made in Canada."

As students explore the challenges faced by indigenous peoples in retaining their traditional food sources, it is important that they be provided with some background information regarding historical and contemporary contexts and traditional lands. The **Empowering the Spirit** website, at www.empoweringthespirit.ca/foundational-knowledge-conversation-guide-series/, provides professional learning resources that can support your own learning and discussions with students.

Watch the **Agriculture More than Ever** video *Canadian Agriculture Trivia* to identify activities and issues related to farming at www.youtube.com/watch?v=UuVcdx9iX80.

- **Sample Wonder Questions:** Why are family farms important to healthy and sustainable food production in Canada? What types of jobs are most important to a family farm?
- **Sample Wonder Questions:** Why has the variety and range of agricultural jobs expanded over time? What different types of agricultural jobs may there be in the future?
- **Sample Wonder Questions:** How can farmers be kept on the land? Why is it important to encourage people to consider jobs in agriculture?
- **Sample Wonder Questions:** What are the advantages of using more technology to produce food? What drawbacks can the increasing use of technology have?

Consult Teacher or Student Background Sources

Remind students that technology in agriculture can include machines and transportation methods, as well as computer apps and software and social media. A historical perspective is provided on the **Canadian Encyclopedia** website in *Technology in Canada*, at www.thecanadianencyclopedia.ca/en/article/technology/. This article provides examples of technology over time that is tied to the changing use of natural resources. Examples include Indigenous technologies. Select those examples you think are appropriate to share with students. Students may require additional supports to use this article as a research source.

- **Sample Wonder Questions:** How do First Nation, Métis and Inuit peoples grow and produce traditional food? What can be learned from Indigenous food production practices for agriculture jobs of the future?

Consult Teacher or Student Background Sources

The **Indigenous Foods First** website provides information and insights into indigenous beliefs and values regarding the environment and traditional foods. Explore stories, recipes and indigenous foods on the website, found at www.iffculture.ca.

Community-supported agriculture provides an interesting perspective through which to explore the influence of First Nations, Métis and Inuit values and beliefs about the interconnectedness of land and human activities. An introductory summary of this approach to farming is provided in *Fresh, Local, and Financially Sound: Community Supported Agriculture in Canada* on the

ActiveHistory.ca website at <http://activehistory.ca/2012/07/fresh-local-and-financially-sound-community-supported-agriculture-in-canada/>. An additional overview of community-supported agriculture in Alberta is provided on www.csaalberta.com/.

- **Sample Wonder Questions:** How is innovation important to Canadian agriculture? How important will innovation be in the future? Does innovation in agriculture always have to include technology?

Consult Teacher or Student Background Sources

Students can be encouraged to start with **Agriculture and Agri-Food Canada's** article, *We Grow a Lot More than You Think*, found at www.agric.gc.ca/eng/about-us/publications/we-grow-a-lot-more-than-you-may-think/?id=1251899760841 to consider the importance of agricultural activities in Canada.

Provide students with the option to identify and investigate the "wonder" question that interests or intrigues them most.

Scaffold

Organize students to work collaboratively in small groups to investigate a project question that they select together. Alternatively, provide students with the choice to work individually or with a partner. Provide additional support to groups or individual students as they define their project questions. Provide more or less structure for the project questions that students select.

Organize student projects and their questions in the classroom or in a digital environment. For example, student-selected questions can be posted on poster paper around the classroom. As students find sources and information, "sticky-note" descriptions can be added to the posters.

Alternatively, a **Padlet**, **Google Drive** or **OneNote** board can be established for clusters of student-selected questions. Students can add their websites, articles, images and information to each board. Start and support students by selecting and adding initial resources and trusted sources to the posters or digital boards.

Share the **Rubric** with students before they begin their project so students keep the criteria in mind and set their own project goals. Discuss and adjust the criteria as appropriate with their students. Find the **Rubric** in **Assessment Support for More than Just Farming**.

Need to Know

Once students select their project questions, have them create a **Need to Know** paper, poster or digital list that identifies what they think they need to know. Their lists may include bulleted and brainstormed points, questions with more specificity, and/or community places or people that they want to find out more about.

A **Need to Know** list makes learning visible to students. It includes both knowledge- and process-based questions, such as:

A **Need to Know** list can be used as an exit ticket or a support for what will be learned next. For example, "How did what you learned today help you answer a Need to Know question?" or "My goal today is to answer the Need to Know question...."

- What skills and knowledge do we need to start the project?
- What is technology?
- What technology has the most impact on farmers today? How do we think technology might change in the future? How could these changes in technology apply to agriculture?
- What is food production?
- What do we need to know to be able to understand why the demand for food production is increasing?

This list can be part of a **Know, Need to Know, Next Steps** Triple T-chart that students create to plan their project. Find these graphic organizers in the **More than Just Farming Project Tools**.



Search and Investigate

Trusted Sources

Students can be provided with a number of options to identify, select, investigate and explore information that will support predictions they make or answers they develop to respond to their project "wonder" questions.

Discuss the use of sources from the classroom, library or approved websites. Encourage students to consider the credibility and reliability of the sources they use.

A digital bulletin board, such as **Padlet**, **Google Drive**, **Google Classroom** or **HyperDoc**, or a classroom poster can be used to establish a "trusted sources" repository. Select websites, print or online books or other information sources that best support the learning needs of your students. List website urls, book or information source titles on the digital bulletin board, shared document or classroom poster.

Use the student **Learning Sources** provided with this project as trusted sources that students can start with. These student resources can be used to spark student discussion and inquiry and support initial research, depending on the project question that students have selected. **Developing Competencies** student resources provide opportunities for students to focus on skills and develop or strengthen competencies. They are meant to be used with the **Learning Sources**. **Select and use those Learning Sources and Developing Competencies resources that are most relevant to you and your students' interests and project focus. Both provide fillable text fields and can be downloaded and completed electronically.**

As students start their research, structure opportunities to develop skills and make decisions to ensure they maintain the focus of their project.

Manage Collaboration

Review and revisit group work protocols to ensure that all students contribute to and participate in their projects. Timeline apps or software, such as the simple timeline provided on **Read Write Think**, is an ideal tool for creating a project timeline.

Connect to Prior Learning

Have students revisit sources they may have used in other projects or learning experiences. Use the **Learning Sources** and **Developing Competencies** student resources as starting points for brainstorming connections and making inferences that support students' project questions.

Consider maintaining posters in the classroom as a means of recording, displaying and sharing information. As students conduct their research and complete learning tasks with the **Learning Sources**, **Developing Competencies** handouts and other sources, have them add information to these posters. For example, posters can list and illustrate different trends, including organic farming, locally grown foods, the use of technology and sustainable farming practices. Posters can support ELL learners and those students who have difficulty recalling, spelling and identifying vocabulary.

Students can be asked to use the **Thinking about Sources (Reading and Analyzing Non-Fiction: RAN)** graphic organizer to select and analyze sources and determine their information needs. Students identify what they think they know, what was confirmed, new information and wonderings.

Emphasize the skill of making inferences with the **Making Inferences** graphic organizer. Students identify facts they find in their research, what they think and why. Find these graphic organizers in **More than Just Farming Project Tools**.

Scaffold

Students can also be asked to use **Read & Write for Google** to highlight words in the PDF **Learning Sources**. The highlighted words are sorted into students' **Google Drives** and can be shared.

Organize and select the **Learning Sources** and **Developing Competencies** student resources that are most relevant to the project questions that students have selected.

Encourage students to keep track of “insightful observations” as they research, by recording key words and phrases as well as sketches, doodles or drawings.

Use a reading support app, such as **Read&Write for Google Chrome**, with **Learning Sources** for those students who require additional support with vocabulary and reading skills.

Integrate

Integrate with **Language Arts** curriculum by creating a classroom word bank. Collect vocabulary words, creating a word bank for students to use during later writing activities. Vocabulary from the **Learning Sources** and **Developing Competencies** student resources is provided in **Teacher Fast Facts and Vocabulary Support**.

Ask students to further categorize key words in their word banks into categories such as descriptive words, items, places and people. Use the word banks and categories to construct descriptive paragraphs about topics such as trends, technology, farming, sustainability, responsibility and stewardship. Encourage students to add imagery to their paragraphs by using descriptive language.

Create digital word banks by using **Google Slides** for each category. Have students add words to each slide from their investigations, research and discussions.

As students use these and other sources, remind them to consider:

- What is my project question?
- How will I locate information?
- What sources will I use?
- How will I know my source is reliable? How will I know it can be trusted?

The **Learning Sources** and **Developing Competencies** handouts included with this project are listed on the following pages. **Developing Competencies** handouts have been designed to support one or more of the **Learning Sources**.

- Select those handouts that best fit the project questions that students select.
- Some students may benefit from selecting handouts independently to support their project questions.
- Select handouts to introduce or reinforce research information that is most relevant to students' project choices.
- Use **Developing Competencies** handouts to focus on competencies and develop skills that students are expected to apply to their project work.

As students select their sources, remind them to consider:

- How do the sources I use influence my project plans?
- How do I choose which information I use?
- What connections do I see between my research sources and what I already know and can do?
- How will I organize my information?
- How will I keep track of the sources I have used?

Scaffold

Provide options for student research and inquiry that accommodate different levels of complexity.

- Realign or simplify the core project question to focus on one factor that will influence agriculture jobs in the future, such as technology or the protection of family farms. Encourage students to explore the core question with a series of examples that they identify from their research.
- Provide students who need additional support with opportunities to use information provided in the **Learning Sources** as the basis of their research. Work with students who require support to identify examples of skills that agriculture jobs require, or conditions that influence those jobs.
- Use a think-aloud strategy to model a thinking process as you work through **Learning Sources** with students who need support. Focus on identification of examples that illustrate what is involved in an agricultural job.
- Pre-teach the vocabulary that students will encounter in the **Learning Sources**.
- Use the questions in **Developing Competencies** for class discussions.
- Provide students with a list of specific sources that can help them narrow and focus their research. For example, students can be guided to focus on one specific type of agricultural job, such as farming.

Learning Source: *Modern Farmers*

This **Learning Source** explores demographic changes in farming and introduces examples of ways in which technology has affected farming practices.

The following additional website sources can be added to classroom trusted sources boards.

Farm Food 360's Virtual Farm Tours, found at www.farmfood360.ca, can be used to explore activities, technology and innovation on different types of farms in Canada.

CN Images of Canada Gallery: Agriculture, found at <http://imagescn.techno-science.ca/agriculture/index.cfm>, is an archived collection of photos courtesy of the **CN (Canadian National) Photo Collection** and the **National Museum of Science and Technology**, organized by category. Photos related to Canada's agricultural history, organized by topic, can provide insight into changes in technology and agricultural practices.

The **Learning Sources** and **Developing Competencies** handouts include fillable text fields. Students can download and save the PDF files to electronically complete the activities.

Note that some students may require additional accommodations and support to complete the **Developing Competencies** activities.

Use these descriptions of student **Learning Sources** and **Developing Competencies** handouts to help you make decisions about how students can use them to support their project work.

Focus on cause and effect relationships related to technology, the increased demand for food production and changes in agriculture using the **Cause and Effect** graphic organizer. Find this graphic organizer in the **More than Just Farming Project Tools**.

The *Agriculture in Alberta Teacher Toolkit* from **Agriculture For Life**, found at http://agricultureforlife.ca/wp-content/uploads/2016/11/AFL_Teacher-Kit_-_Web.pdf, includes **Alberta Agri-Food Facts** that can provide some relevant and interesting statistics for students to explore further. This teacher resource also includes a section on careers in agriculture.



Developing Competencies: Comparing Farm Technology asks students to take virtual farm tours to identify and compare ways in which technology is used, as well as explore jobs that can be found on different types of farms. It is designed to be used with **Modern Farmers**.

Learning Source: *Farm Experiences*

This **Learning Source** shares stories of farming practices and family farms that include references to sustainable practices, the use and impact of technology and contributions that farmers make to Canada's food supply.

The following additional website sources can be added to classroom trusted sources boards.

Dairy Farmers, Deeply Rooted for a Strong Future from the **Dairy Farmers of Canada** shares personal family stories of farming in each of Canada's provinces. Find these stories at www.dairyfarmers.ca/news-centre/news/policy/dairy-farmers-of-canada-is-proud-to-present-the-book-dairy-farmers-deeply-rooted-for-a-strong-future. Students may require support to read some of these family stories.

The *Agriculture in Alberta Teacher Toolkit* from **Agriculture For Life** also provides a number of articles that can be excerpted for student use.

The family stories in *Dairy Farms, Deeply Rooted for a Strong Future* can help students make connections to what they are learning in Grade 4 and 5 Social Studies. How do these stories provide insight into the experiences and perspectives of families that immigrated to and settled in different regions of Canada?



Developing Competencies: Share Family and Community Stories

focuses on communication and asks students to make connections between farming experiences and how changes land and technology. It is designed to be used with both **Farm Experiences** and **How many people does it take to make a glass of milk?**

Learning Source: *How many people does it take to make a glass of milk?*

This **Learning Source** uses dairy farming as an example to focus on the range of jobs that are part of the process of making milk.

The following additional website source can be added to classroom trusted sources boards.

Alberta Milk provides some information on the jobs in dairy farming on their **Ask a Dairy Farmer** webpage at <https://albertamilk.com/ask-dairy-farmer/>. Students can search with the word "jobs" to find answers to questions such as, *What jobs do dairy farmers do every day?* and *How does the milk get transported from the farm to the factory?*

Learning Source: Job Board

This **Learning Source** provides information and statistics relating to the range of jobs in agriculture and the agri-food industry, which produces food for Canadians and the global food market.

The following additional website sources can be added to classroom trusted sources boards.

The **Agri Pathways** website, found at www.cahrc-ccrha.ca/agri-pathways, provides two pathways to search for examples of agricultural jobs. Students can search by type of farm or by the subject area that interests them most.

Agriculture More than Ever provides a number of *Fact Photos* that students can access and download. These photos highlight various types of farms and agricultural activities. They can be accessed at www.agriculturemorethanever.ca/resources/fact-photos/.

The **Real Dirt on Farming**, found at www.realdirtontfarming.ca/assets/docs/PDFs/2016-DIRT-DIGEST-ENG.pdf, provides a number of articles related to present and future possibilities in farming practices and the growing need for increased food production.



Developing Competencies: Access Information to Explore Interests

and Possibilities asks students to consider their interests and skills to explore different types of jobs that are available in agriculture. Students may need support to access the Agri Pathways website tools. Students are also challenged to identify a wide variety of jobs in the dairy industry. The answers are provided at the end of this project guide. It is designed to be used with **Job Board**.

Expert Options

If appropriate, plan to invite any relevant and available experts from the community that you or students may be able to identify and contact.

Work with students and provide information about how to gather information, artifacts, images or additional sources from these experts. If you have contacts and resources, organize and provide trusted interview sources that students can access.

Consider ideas such as the following:

- What adults in our school and broader community are available for interviews?
- How can I provide opportunities for students to take or collect photographs and/or artifacts?

Students can also submit questions to **Alberta Milk's Ask a Dairy Farmer** website feature, at <https://albertamilk.com/ask-dairy-farmer/>. Prepare the questions so that they are meaningful and relevant. Have students search this webpage in advance to find existing questions and answers that are relevant to their project-based inquiries.

- How can parents or grandparents support students' project-based inquiries as interview subjects?
- How can community Elders or Knowledge Keepers provide support for students' project-based inquiries?
- How can I manage student groups to ensure that individual students have opportunities to participate in groups?
- What interview skills should be taught and reinforced with students?

Information Management

Plan class time to debrief students on the research they have collected. What have they found to be the most surprising, interesting, impressive or important? How do they think their research helps them understand more about the opportunities and challenges involved in agricultural jobs for the future?

Discuss the concept of values with students. **Values** are ideas and principles that you believe to be most important in life. Ask students to consider why values are important in the requirements for a job.

- Work with students to develop an organizational structure that supports them as they create their job descriptions, focusing on the knowledge, skills and values they think a worker in agriculture will require in the future. Challenge students to consider how agricultural workers contribute to ways of life with the products they are involved in growing and creating.
- Ask students to start by creating a "Then and Now" classroom or digital bulletin board that highlights different jobs in agriculture. Challenge students to "fill" the bulletin board as they complete their research and post examples of current jobs in agriculture. Then, have them add "sticky" notes that predict what they think this job will look like in the future.

Integrate

Emphasize Math graphing skills by using some of the statistics about family farms as a starting point for skill-based practice.

Students can also be asked to calculate the distances that a milk product can travel. Use a map of Alberta, identify a dairy farming area and a processing plant, and trace a route from the farm to an urban store or market. Encourage students to apply what they have learned about using scale to calculate or indicate distances on a map.

Connect to Prior Learning

Ask students to consider knowledge, skills and values that are part of jobs that they may be familiar with, including those of family members and/or friends.

- Suggest that students use index cards, handmade cards or digital cards to identify examples of knowledge, skills and values associated with different types of agricultural jobs. Collect images, facts and stories that represent how knowledge, a skill or values are associated with a job.
- Organize and select cards that support the focus of each student's job description of the future. Depending on the focus of student projects, discuss and create categories such as the following:
 - Information, stories, examples and statistics related to what a job that is directly connected with the land and natural resources may look like in the future
 - Information, stories, examples and statistics related to a job of the future that uses technology to support agricultural activities
 - Information, stories, examples and statistics related to what a job that focuses on making agriculture more efficient may look like in the future
 - Information, stories, examples and statistics related to food production jobs in the future
- Remind students to use the data they collected in response to their research question as well as the core project question: **What are the agriculture jobs of the future?**

Assess



Consult with individual students to review how they assessed themselves in the **Target Learning** features that are provided in some of the **Developing Competencies** student resources.

Have students use the **Project Check-In** chart to self-assess competency development – combinations of knowledge, skills and attitudes that students apply through curricular learning outcomes.

Observe students' research skills as they work together in groups. Ask students to individually reflect on the types of sources they used in their research, source credibility and the information they gained from each.

Have students maintain and use a reflective journal to keep notes as they progress through their projects. Pose questions such as the following as students start their inquiries, complete their research and start to design their projects:

- What is going well?
- What are we having trouble with?
- What questions do we have?
- What do we need to do next?

Reinforce self- and group-assessment skills with the **Making Connections** graphic organizer. Students identify facts they connected with, puzzles and feelings. Find this graphic organizer in the **More than Just Farming Project Tools**.

Find the **Project Check-In** in **Assessment Support for More than Just Farming**.

Suggest that students also use these reflective questions to complete a check-in on their group work and collaborative skills.



Design and Create

Project Creation

Challenge students to consider how they can communicate what is most important in an agricultural job of the future, keeping their project focus in mind. Provide time for students to discuss their ideas, either in small groups or as a class. Encourage students to revisit examples of job descriptions they may have found and used in their research and revisit predictions they may have made about how changes and trends in agriculture may affect the need for different jobs. Explore examples of job advertisements for ideas.

Explore options for creation of a job description that shares what students think are important in an agriculture job of the future, identifying the knowledge, skills and values as well as why this job is important to the future. Provide some time for students to review the features and functions of any digital options they may choose to use.

The job descriptions should encourage students' creativity and ideas, but can be organized around options such as the following:

- An online advertisement in the form of a webpage or blog post
- A mural format that presents a series of "snapshots" that shares different aspects of a future job in agriculture
- A collage of the knowledge, skills and values that represent the agricultural job of the future
- A short story or descriptive paragraph that involves a future agricultural job

Suggest that students consider the following steps as they create their job descriptions:

- Identify the agricultural job.
- Select facts, statistics and information that illustrates the need for the job. Write short sentences or phrases for these important facts, statistics or information.
- Make decisions about the visual elements of the job advertisement. Is word art going to be used to emphasize important ideas? **Canva** provides a simple tutorial on its features and provides free photos, illustrations, backgrounds, icons, shapes, lines, grids and frames.
- Create the job description.

Graphic organizers, including different types of chart templates, are provided in **More than Just Farming Project Tools**.

Scaffold

Provide options that provide support and accommodate different strengths, interests and abilities in the creation of their job descriptions, such as:

- Model the process of using a **Learning Source** to illustrate how to identify examples of jobs in agriculture. Guide students who need additional support in finding examples they can use to create their job descriptions.
- Provide various group structures within which students who require support can work. For example, ask each student in a project group to focus on one **Learning Source** to identify examples of information that can be a starting point for the creation of the job description.
- Provide a sequenced criteria list that students must meet at a minimum with their projects. Negotiate where students should be on the criteria list. Customize the project **Rubric** to address the criteria negotiated with students.
- Focus on information provided in the **Learning Sources** and work with students who require support to identify examples of knowledge, skills and values that are needed for agricultural jobs. Identify information that illustrates why the types of jobs required in the future may have to respond to changing uses of technology and the demand for increased food production.



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- Provide opportunities for students to give each other feedback and suggestions. Use **modeling, think-pair-share, think-aloud** and **stand and share** sessions with students so they can benefit from the ideas and progress of their classmates.

In a stand and share session, students all stand. When they volunteer an idea, response or information, they sit down. If a student volunteers an idea that another student was thinking of, that student can also sit down. This strategy can create a sharing context with minimal pressure and promote a collaborative environment.

- Use a **Think Sheet** graphic organizer to have students self-check their progress as they create their projects with the following questions:
 - What would be helpful to know more about?
 - What does this have to do with the core project question?
 - Where are we stuck?
 - Where do we need more information?
 - How would we summarize where we are right now?

Assess

Help students understand that their timelines will be assessed according to the criteria on the **Rubric**. Share the rubric with students and make connections between the criteria on the **Project Check-In** chart and the **Rubric**. Discuss how their completed timelines involve the competencies they have developed through their work on their projects.

Find the **Rubric** in **Assessment Support for More than Just Farming**. Find the **Think Sheet** graphic organizer in the **More than Just Farming Project Tools**.

The **Project Check-In** chart can be found in **Assessment Support for More than Just Farming**.



Publish and Share

Peer Share

Sharing with peers in the classroom can create and reinforce a sense of community. Use a carousel strategy to have students share their research and learning with other students or groups in the class. Ask each group to organize a display of their research results on a table. Place a comment sheet on each group table. Have groups rotate through the displays at timed intervals. One group member can remain with his or her display to present group research. Encourage visiting groups to record their feedback, in the form of questions or comments. Alternatively, groups can stay together and be asked to record feedback on the comment sheet on each table.

Public Share

If appropriate, provide students with an opportunity to share and communicate their findings and conclusions with parents, family members and community members.

Publicly sharing student projects can range from posting More than Just Farming job descriptions to school or community **Padlet** boards to sharing them with other schools or classrooms in your jurisdiction. Job descriptions can also be photographed to share online.

Students can also create a multimedia presentation, using an app such as **Sway**, to produce and share their job descriptions.

Students can be asked to make a **Sway** to share their learning with classmates as well as with parents and other family members at Demonstration of Learning opportunities. **Google Classroom** and **Google+ Community** can also be used to share ongoing project work and completed projects.

Be aware of FOIP issues and jurisdiction policies when structuring and implementing sharing opportunities.



Reflection

Students can be asked to reflect on these questions by selecting from activities such as:

- Adding reflection cards (index or digital note cards) to their project timelines
- Creating a written response (blog, paragraph, media article)
- Making a mind map or bubble map
- Creating a poster

Questions such as these can also be used on exit slips.

Provide students with options to reflect on their projects and learning, using questions such as the following:

- How do you think agricultural jobs have changed over the years? What do you think is the most important factor of change?
- How do you think jobs may change in the future?
- How do you think people involved in agriculture can continue to improve farming practices?
- How can people involved in different occupations improve agricultural practices?
- What impact does growth and improvement in agriculture have on individuals, communities and the environment?
- How does this apply to other types of human activities?
- How do you think technology will be used in agricultural jobs of the future?
- How do you think farmers in the present can support farmers of the future?

Challenge students to pose their own reflection questions as well.



Curriculum Support

More than Just Farming supports specific learning outcomes in **Grades 4, 5 and 6 Language Arts, Health and Life Skills** and **Math** curriculum as well as **Career and Technology Foundations for Grades 5 and 6**. The learning outcomes in the charts that follow are developed and/or reinforced with the activities of this project. Use the check boxes to keep track of the learning outcomes that are appropriate for your grade and subject area context.



The activities in this project may also be used to support learning outcomes in the **Grades 4 and 5 Social Studies** program of studies related to the way that the land sustains communities as well as how natural resources are used for agriculture. Learning outcomes related to waste production resulting from human activities and the causes and effects of climate change from the **Grade 4 and 5 Science** program of studies may also be supported with this project.

Project activities also support learning outcomes in the **Information and Communication Technology (ICT)** program of studies. ICT outcomes are also addressed in the Language Arts program of studies.

1.1 Discover and Explore

Express ideas and develop understanding

compare new ideas, information and experiences to prior knowledge and experiences

ask questions, paraphrase and discuss to explore ideas and understand new concepts

share personal responses to explore and develop understanding of oral, print and other media texts

1.2 Clarify and Extend

Consider the ideas of others

identify other perspectives by exploring a variety of ideas, opinions, responses and oral, print and other media texts

Combine ideas

use talk, notes, personal writing and representing to record and reflect on ideas, information and experiences

Extend understanding

explore ways to find additional ideas and information to extend understanding

2.1 Use Strategies and Cues

Use prior knowledge

use ideas and concepts, developed through personal interests, experiences and discussion, to understand new ideas and information

2.2 Respond to Texts

Experience various texts

experience oral, print and other media texts from a variety of cultural traditions and genres

Construct meaning from texts

identify the main events in oral, print and other media texts; explain their causes, and describe how they influence subsequent event

develop own opinions based on ideas encountered in oral, print and other media texts

2.4 Create Original Text

Generate ideas

use a variety of strategies for generating and organizing ideas and experiences in oral, print and other media texts

Structure text

produce oral, print and other media texts that follow a logical sequence, and demonstrate clear relationships between character and plot

produce narratives that describe experiences and reflect personal responses

3.1 Plan and Focus

Determine information needs

ask relevant questions, and respond to questions related to particular topics

Plan to gather information

develop and follow a class plan for accessing and gathering ideas and information

3.2 Select and Process

Use a variety of sources

locate information to answer research questions, using a variety of sources, such as maps, atlases, charts, dictionaries, school libraries, video programs, elders in the community and field trips

3.3 Organize, Record and Evaluate

Organize information

organize ideas and information, using appropriate categories, chronological order, cause and effect, or posing and answering questions

record ideas and information that are on topic

organize oral, print and other media texts into sections that relate to and develop the topic

3.4 Share and Review

Share ideas and information

communicate ideas and information in a variety of oral, print and other media texts, such as short reports, talks, posters

4.3 Present and Share

Present information

present to peers ideas and information on a topic of interest, in a well-organized form

5.2 Work within a Group

Cooperate with others

take responsibility for collaborating with others to achieve group goals

Work in groups

share personal knowledge of a topic to develop purposes for research or investigations and possible categories of questions

use brainstorming, summarizing and reporting to organize and carry out group projects

1.1 Discover and Explore

Express ideas and develop understanding

use appropriate prior knowledge and experiences to make sense of new ideas and information

read, write, represent and talk to explore personal understandings of new ideas and information

use own experiences as a basis for exploring and expressing opinions and understanding

1.2 Clarify and Extend

Consider the ideas of others

seek the viewpoints of others to build on personal responses and understanding

Combine ideas

use talk, notes, personal writing and representing to explore relationships among own ideas and experiences, those of others and those encountered in oral, print and other media text

Extend understanding

search for further ideas and information from others and from oral, print and other media texts to extend understanding

2.1 Use Strategies and Cues

Use prior knowledge

describe ways that personal experiences and prior knowledge contribute to understanding new ideas and information

2.2 Respond to Texts

Experience various texts

experience oral, print and other media texts from a variety of cultural traditions and genres

write or represent the meaning of texts in different forms

Construct meaning from texts

support own interpretations of oral, print and other media texts, using evidence from personal experiences and the text

2.4 Create Original Text

Generate ideas

use texts from listening, reading and viewing experiences as models for producing own oral, print and other media texts

Structure text

use structures encountered in texts to organize and present ideas in own oral, print and other media texts

3.1 Plan and Focus

Determine information needs

identify categories of information related to particular topics, and ask questions related to each category

Plan to gather information

develop and follow own plan for gathering and recording ideas and information

3.2 Select and Process

Use a variety of sources

locate information to answer research questions, using a variety of sources, such as newspapers, encyclopedias, CDROMs, a series by the same writer, scripts, diaries, autobiographies, interviews and oral traditions

3.3 Organize, Record and Evaluate

Organize information

use clear organizational structures, such as chronological order, and cause and effect, to link ideas and information and to assist audience understanding

organize ideas and information to emphasize key points for the audience

Record information

combine ideas and information from several sources

3.4 Share and Review

Share ideas and information

communicate ideas and information in a variety of oral, print and other media texts, such as illustrated reports, charts, graphic displays and travelogues

4.3 Present and Share

Present information

organize ideas and information in presentations to maintain a clear focus and engage the audience

5.2 Work within a Group

Cooperate with others

accept and take responsibility for fulfilling own role as a group member

Work in groups

formulate questions to guide research or investigations, with attention to specific audiences and purposes

contribute ideas to help solve problems, and listen and respond constructively

1.1 Discover and Explore

Express ideas and develop understanding

use prior experiences with oral, print and other media texts to choose new texts that meet learning needs and interest

read, write, represent and talk to explore and explain connections between prior knowledge and new information in oral, print and other media texts

engage in exploratory communication to share personal responses and develop own interpretations

1.2 Clarify and Extend

Consider the ideas of others

select from the ideas and observations of others to expand personal understanding

Combine ideas

use talk, notes, personal writing and representing, together with texts and the ideas of others, to clarify and shape understanding

Extend understanding

evaluate the usefulness of new ideas, techniques and texts in terms of present understanding

2.1 Use Strategies and Cues

Use prior knowledge

combine personal experiences and the knowledge and skills gained through previous experiences with oral, print and other media texts to understand new ideas and information

2.2 Respond to Texts

Experience various texts

experience oral, print and other media texts from a variety of cultural traditions and genres

Construct meaning from texts

make judgements and inferences related to events, characters, setting and main ideas of oral, print & other media texts

2.4 Create Original Text

Generate ideas

choose life themes encountered in reading, listening and viewing activities, and in own experiences, for creating oral, print and other media texts

Structure text

determine purpose and audience needs to choose forms, and organize ideas and details in oral, print & other media texts

3.1 Plan and Focus

Determine information needs

decide on and select the information needed to support a point of view

Plan to gather information

develop and follow own plan for accessing and gathering ideas and information, considering guidelines for time and length of investigation and presentation

3.2 Select and Process

Use a variety of sources

locate information to answer research questions, using a variety of sources, such as printed texts, bulletin boards, biographies, art, music, community resource people, CDROMs and the Internet

3.3 Organize, Record and Evaluate

Organize information

organize ideas and information using a variety of strategies and techniques, such as comparing and contrasting, and classifying and sorting according to subtopics and sequence

Record information

make notes on a topic, combining information from more than one source; use reference sources appropriately

use outlines, thought webs and summaries to show the relationships among ideas and information and to clarify meaning

3.4 Share and Review

Share ideas and information

communicate ideas and information in a variety of oral, print and other media texts, such as multiparagraph reports, question and answer formats and graphs

4.3 Present and Share

Present information

use various styles and forms of presentations, depending on content, audience and purpose

5.2 Work within a Group

Cooperate with others

assume a variety of roles, and share responsibilities as a group member

Work in groups

contribute to group knowledge of topics to identify and focus information needs, sources and purposes for research or investigations

Wellness:
Health and
Life Skills
Grade 4

Life Roles and Career Development

L-4.5 relate personal interests to various occupations

L-4.6 recognize that personal roles will change over time and circumstances

Wellness:
Health and
Life Skills
Grade 5

Life Roles and Career Development

L-5.5 relate personal skills to various occupations

L-5.6 assess how roles, expectations and images of others may influence career/life role interests; e.g., influence of family, friends, role models, media

Wellness:
Health and
Life Skills
Grade 6

Life Roles and Career Development

L-6.5 relate knowledge, skills and attitudes of a successful student to those of successful workers

Math
Grade 4

Number

Develop number sense.

1. Represent and describe whole numbers to 10 000, pictorially and symbolically.
2. Compare and order numbers to 10 000.
8. Demonstrate an understanding of fractions less than or equal to one by using concrete, pictorial and symbolic representations to name and record fractions for the parts of a whole or a set.

Patterns and Relations (Patterns)

Use patterns to describe the world and to solve problems.

1. Identify and describe patterns found in tables and charts.
2. Translate among different representations of a pattern, such as a table, a chart or concrete materials.
3. Represent, describe and extend patterns and relationships, using charts and tables, to solve problems.
4. Identify and explain mathematical relationships, using charts and diagrams, to solve problems.

Statistics and Probability (Data Analysis)

Collect, display and analyze data to solve problems.

2. Construct and interpret pictographs and bar graphs involving many-to-one correspondence to draw conclusions.

Shape and Space (Measurement)

Use direct and indirect measurement to solve problems.

3. Demonstrate an understanding of area of regular and irregular 2-D shapes by recognizing that area is measured in square units.

Math
Grade 5

Number

Develop number sense.

1. Represent and describe whole numbers to 1 000 000.
2. Use estimation strategies in problem-solving contexts.
7. Demonstrate an understanding of fractions by using concrete, pictorial and symbolic representations to create sets of equivalent fractions.
8. Describe and represent decimals (tenths, hundredths, thousandths), concretely, pictorially and symbolically
9. Relate decimals to fractions and fractions to decimals (to thousandths)

Patterns and Relations (Patterns)

Use patterns to describe the world and to solve problems.

1. Determine the pattern rule to make predictions about subsequent elements.

Statistics and Probability (Data Analysis)

Collect, display and analyze data to solve problems.

1. Differentiate between first-hand and second-hand data.

Math
Grade 6

Number

Develop number sense.

1. Demonstrate an understanding of place value, including numbers that are:
 - greater than one million
 - less than one thousandth.
2. Solve problems involving whole numbers and decimal numbers.

Patterns and Relations (Patterns)

Use patterns to describe the world and to solve problems.

1. Represent and describe patterns and relationships, using graphs and tables.
2. Demonstrate an understanding of the relationships within tables of values to solve problems.

Statistics and Probability (Data Analysis)

Collect, display and analyze data to solve problems.

3. Graph collected data, and analyze the graph to solve problems.

Career and
Technology
Foundations
Grade 5
Grade 6

Note that the CTF program of studies has 14 competency-focused outcomes that are the same for grades 5 to 9.

CTF is exploring interests, passions and skills while making personal connections to career possibilities.

I explore my interests and passions while making personal connections to career possibilities.

I use occupational area skills, knowledge and technologies.

CTF is planning, creating, appraising and communicating in response to challenges.

I plan in response to challenges.

I make decisions in response to challenges.

I solve problems in response to challenges.

I create products, performances or services in response to challenges.

I appraise the skills, knowledge and technologies used to respond to challenges.

I communicate my learning.

CTF is working independently and with others while exploring careers and technology.

I develop skills that support effective relationships.

I collaborate to achieve common goals.

Note that since fall 2016, the Career and Technology Foundations (CTF) program of studies has been approved for provincial implementation as an optional program for students Grades 5-9.

Students develop communication, collaboration, critical thinking, time management and problem solving skills through hands-on learning experiences. CTF supports the development of literacy, numeracy and competencies, which can be developed through student-focused learning opportunities that can include an interdisciplinary approach.

